CLAIMS

1. A method for identifying pathologic change in medical image data, comprising:
obtaining a temporal subtraction image from two images taken at different times;
extracting at least one feature from the subtraction image;
determining whether a region of interest in the subtraction image includes an abnormality based on the extracted at least one feature; and
superimposing a computer-aided diagnostic symbol on at least one of the temporal subtraction image and the two images.

2. The method of Claim 1, wherein the extracting step comprises:
constructing a gray-level histogram from the temporal subtraction image;
constructing a binary image based on the gray-level histogram; and
extracting at least one feature from the gray-level histogram.

3. The method of Claim 1, wherein the determining step comprises:
determining a registration accuracy based on the gray-level histogram; and
distinguishing a region of pathologic change from regions with a misregistration artifact.

4. The method of Claim 1, wherein said extracting step comprises:
identifying an organ mask region; and
spatially smoothing said organ mask region.

5. The method of Claim 1, wherein said extracting step comprises:
producing a histogram of pixels in the subtraction image;
determining a threshold level based on the produced histogram;
thresholding the subtraction image using said threshold and identifying ON and OFF pixels based on the thresholding;

identifying a contiguous region of ON pixels; and

extracting at least one of geometric or gray-level feature from said contiguous region.

6. The method of Claim 1, wherein said obtaining step comprises:

obtaining a first dual-energy image, a first standard image, and one of a first bone image and a first soft tissue image from the first dual-energy image at a first point in time;

obtaining a second dual-energy image, a second standard image, and one of a second bone image and a second soft tissue image from the second dual-energy image at a second point in time;

using the first and second standard images to obtain shift vectors to obtain image registration;

performing temporal subtraction, using said shift vectors, on one of the first and second bone images or one of the first and second soft tissue images to produce a temporally subtracted image; and

outputting the temporally subtracted image

7. The method of Claim 6, wherein said outputting step comprises:

outputting the temporally subtracted image to a display and displaying the temporally subtracted image.

8. The method of Claim 6, wherein said outputting step comprises:

outputting the temporally subtracted image to a processor; and

performing computer aided diagnosis on the subtracted image.

9. The method of Claim 8, wherein said step of performing computer aided diagnosis comprises:

identifying pathologic change in the temporally subtracted image.

10. The method of Claim 9, wherein said identifying step comprises:

obtaining a temporal subtraction image from two images taken at different times;

constructing a gray-level histogram from the temporal subtraction image;

constructing a binary image based on the gray-level histogram;

determining a registration accuracy of the gray-level histogram; and

distinguishing a region of pathologic change from regions with a misregistration artifact.

11. The method of Claim 8, further comprising:

superimposing a computer-aided diagnostic symbol on at least a selected one of the temporal subtraction image, the first dual-energy image, the first standard image, the first bone image, the first soft tissue image, the second dual-energy image, the second standard image, the second bone image, and the second soft tissue image; and

displaying the selected one of the temporal subtraction image, the first dual-energy image, the first standard image, the first bone image, the first soft tissue image, the second dual-energy image, the second standard image, the second bone image, and the second soft tissue image with the computer-aided diagnostic symbol superimposed thereon.

12. A system implementing the method of any one of Claims 1-11.

13. A computer program product configured to host instructions configured to enable a computing device to perform any one of the steps of Claims 1-11.

14. A method for identifying pathologic change in medical image data, comprising:

obtaining a first dual-energy image, a first standard image, and one of a first bone image and a first soft tissue image from the first dual-energy image at a first point in time;

obtaining a second dual-energy image, a second standard image, and one of a second bone image and a second soft tissue image from the second dual-energy image at a second point in time;

using the first and second standard images to obtain shift vectors to obtain image registration;

performing temporal subtraction, using said shift vectors, on one of the first and second bone images or one of the first and second soft tissue images to produce a temporally subtracted image; and

outputting the temporally subtracted image

15. The method of Claim 14, wherein said outputting step comprises:

outputting the temporally subtracted image to a display and displaying the temporally subtracted image.

16. The method of Claim 14, wherein said outputting step comprises:

outputting the temporally subtracted image to a processor; and

performing computer aided diagnosis on the subtracted image.

17. The method of Claim 16, wherein said step of performing computer aided diagnosis comprises:

identifying pathologic change in the temporally subtracted image.

18. The method of Claim 16, wherein said identifying step comprises:

obtaining a temporal subtraction image from two images taken at different times;

constructing a gray-level histogram from the temporal subtraction image;

constructing a binary image based on the gray-level histogram;

determining a registration accuracy of the gray-level histogram; and

distinguishing a region of pathologic change from regions with a misregistration artifact.

19. The method of Claim 16, further comprising:

superimposing a computer-aided diagnostic symbol on at least a selected one of the temporal subtraction image, the first dual-energy image, the first standard image, the first bone image, the first soft tissue image, the second dual-energy image, the second standard image, the second bone image, and the second soft tissue image; and

displaying the selected one of the temporal subtraction image, the first dual-energy image, the first standard image, the first bone image, the first soft tissue image, the second dual-energy image, the second standard image, the second bone image, and the second soft tissue image with the computer-aided diagnostic symbol superimposed thereon.

20. A system implementing the method of any one of Claims 14-19.

21. A computer program product configured to host instructions configured to enable a computing device to perform any one of the steps of Claims 14-19.